

 CAC CAIRO AMERICAN C • O • L • L • E • G • E	IM2 Quiz 5A	
	Name:	March 12, 2017
	Teacher: Mr. Rawlings and Mr. Dunham	Calculator: Active
	Marks: ____ out of 20	

1) Given the exponential function $y = 250(0.73)^x$

a) Does this model represent exponential growth or decay? Explain. **[1 mark]**

b) What is the initial value? **[1 mark]**

c) What is the growth factor? **[1 mark]**

d) Write down the growth rate as a percent. **[1 mark]**

e) To the nearest hundredth, what is the value of y when x = 7. **[1 mark]**

f) To the nearest hundredth, what is the value of x when y = 2. **[2 marks]**

2) Given the exponential function $f(x) = 200(1.0535)^x$

a) Does this model represent exponential growth or decay? Explain. **[1 mark]**

b) What is the initial value? **[1 mark]**

c) What is the growth factor? **[1 mark]**

d) Write down the growth rate as a percent. **[1 mark]**

e) To the nearest hundredth, what is the value of y when x = 17. **[1 mark]**

f) To the nearest hundredth, what is the value of x when y = 1000. **[2 marks]**



3. As of January 1 it was estimated that approximately 19,500,001 people live in Cairo and that the population is growing at a rate of approximately 2.3% per year.
- a. Write an equation that models Cairo's growth. **[1 mark]**
- b. Approximately, what will be the population in 4 years? **[1 mark]**
- c. According to your model, to the nearest year, in which year should the population reach 30,000,000 people? **[2 mark]**



A 99.96% pure ring of Plutonium

4. Plutonium-239 (Pu-239) is a common by-product in the production of nuclear energy. It has a half-life of 24,110 years. Suppose you are in charge of making sure 1,000 grams of Pu-238 is stored safely. In how many years should there be less than 1 gram left? **[2 marks]**